Harding Lawson Associates

A Report Prepared for

United States Navy
Western Division
Naval Facilities Engineering Command
P.O. Box 727
San Bruno, California 94066-0720

PUMP HOUSE - BUILDING 819 INVESTIGATION
NAVAL STATION, TREASURE ISLAND
HUNTERS POINT ANNEX
SAN FRANCISCO, CALIFORNIA

HLA Job No. 02176,163.02

by

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November 3, 1988

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1.0 INTRODUCTION

This report presents the results of Harding Lawson Associates' (HLA) investigation of the Pump House-Building 819 at the Naval Station, Treasure Island, Hunters Point Annex (HPA), San Francisco, California (Plate 1).

The Navy has indicated that an oily sludge was discovered inside a secondary flow equalization chamber (the chamber) inside Building 819. The sludge was also found in an adjacent manhole and in the 33-inch-diameter sewer line that leads from the manhole beneath Spear Avenue to Building 819. The manhole, sewer line, and flow equalization chamber are all part of the HPA sanitary sewer system and receive domestic sanitary waste regularly. The purpose of this investigation was to characterize the oily sludge to evaluate the proper disposal methods for the material in this portion of the sanitary sewer system. The area of investigation is shown on Plate 2.

The scope of the investigation consisted of collecting and analyzing one fluid/sludge sample from each of two locations within the secondary flow equalization chamber in Building 819 and a fluid sample from a sewage manhole adjacent to and leading into Building 819, evaluating the analytical results, and preparing this report.

2.0 FIELD INVESTIGATION

Sampling at the Pump House-Building 819 was conducted on May 17, 1988. Due to the semi-confined space conditions at the site, the HPA Fire Department, HPA Site Safety Officer, and an HPA security officer were also present during the sampling. Sampling personnel were equipped with Level C personal protective equipment (*Section 7.0, Site Safety Plan; HLA 1988a*).

The samples from the chamber inside Building 819 and the sewer manhole adjacent to Building 819 were collected using a dedicated clean glass jar lowered into the sump on dedicated nylon cord. A sample was retrieved from each of the locations and decanted from the top of the jar directly into the appropriate laboratory-supplied sample container specified for each analytical parameter. The samples were labeled and stored in a cooler containing blue ice (cooled to approximately 4°C) until they were delivered to the laboratory at the end of the field day.

Sample PH01, collected from the bottom of the chamber, consisted of both a black sludge and a brown cloudy fluid. Sample PH02, collected from the top of the chamber, consisted of a brown cloudy fluid that contained a small portion of black sludge. Sample PH03 was collected from the sewer manhole south of Building 819 and consisted of tan slightly cloudy fluid. The black sludge portion of PH01 was analyzed, as was the liquid portion of PH02.

A field blank (OC04) was prepared at the HLA field office at HPA by decanting deionized water from a clean glass wide-mouth pint jar into the appropriate laboratory-supplied sample container for the specified analytical parameter.

Chain of custody forms were completed in the field as specified in Section 13.0 of the Quality Assurance Project Plan (QAPP) (*HLA, 1988b*). The samples were delivered to Curtis Tompkins, Ltd., analytical laboratory at the end of the field day.

3.0 CHEMICAL ANALYSES AND RESULTS

The samples and a field blank were analyzed for pH (EPA Test Method 9040), cyanide (SMWW Test Method 412J), sulfide (SMWW Test Method 427D), oil and grease (SMWW Test Method 503A), CAM Metals (EPA Test Methods 7040, 6010, 7080, 7090, 7470, 7840), semivolatile organic compounds (EPA Test Method 625), and organochlorine pesticides and polychlorinated biphenyls (PCBs) (EPA Test Method 608). The analyses were performed by Curtis and Tompkins Laboratories, Ltd. of San Francisco and Los Angeles; the specific analyses were performed by each branch depending on their state certifications.

Metals were detected at low concentrations in all three samples and sulfide was detected in Sample PH01. All other analyses yielded non-detectable concentrations in these samples. Table 1 summarizes the results from the detected analytes. The laboratory reports and chain of custody form are presented in the Appendix.

4.0 DISCUSSION AND RECOMMENDATIONS

Review of site history information and analytical data indicates that there appears to be no immediate threat to human health and/or the environment at the Pump House-Building 819 site. According to the analyses conducted in this investigation, the sludge/liquid from the Pump House are not considered as a hazardous waste. The sludge and liquid samples analyzed from this site contained low levels of metals and sulfides (pump house sludge) that are typical of municipal sewage sludges (*Sommers, 1977*).

No immediate response action for the Pump House-Building 819 is deemed necessary at this time. As a result of the sample analyses presented herein, the chamber sludge and liquid should be disposed of as a sanitary waste sludge/liquid.

5.0 REFERENCES

HLA, 1988a. *Site Safety Plan, Naval Station, Treasure Island, Hunters Point Annex, San Francisco, California.* January 14.

HLA, 1988b. *Quality Assurance Project Plan (QAPP), Naval Station, Treasure Island, Hunters Point Annex, San Francisco, California.* May 26.

Sommers, L.E., 1977. *Chemical Composition of Sewage Sludges and Analysis of their Potential as Fertilizers.* J. Environ. Qual., 6:225-239, 1977.

TABLES

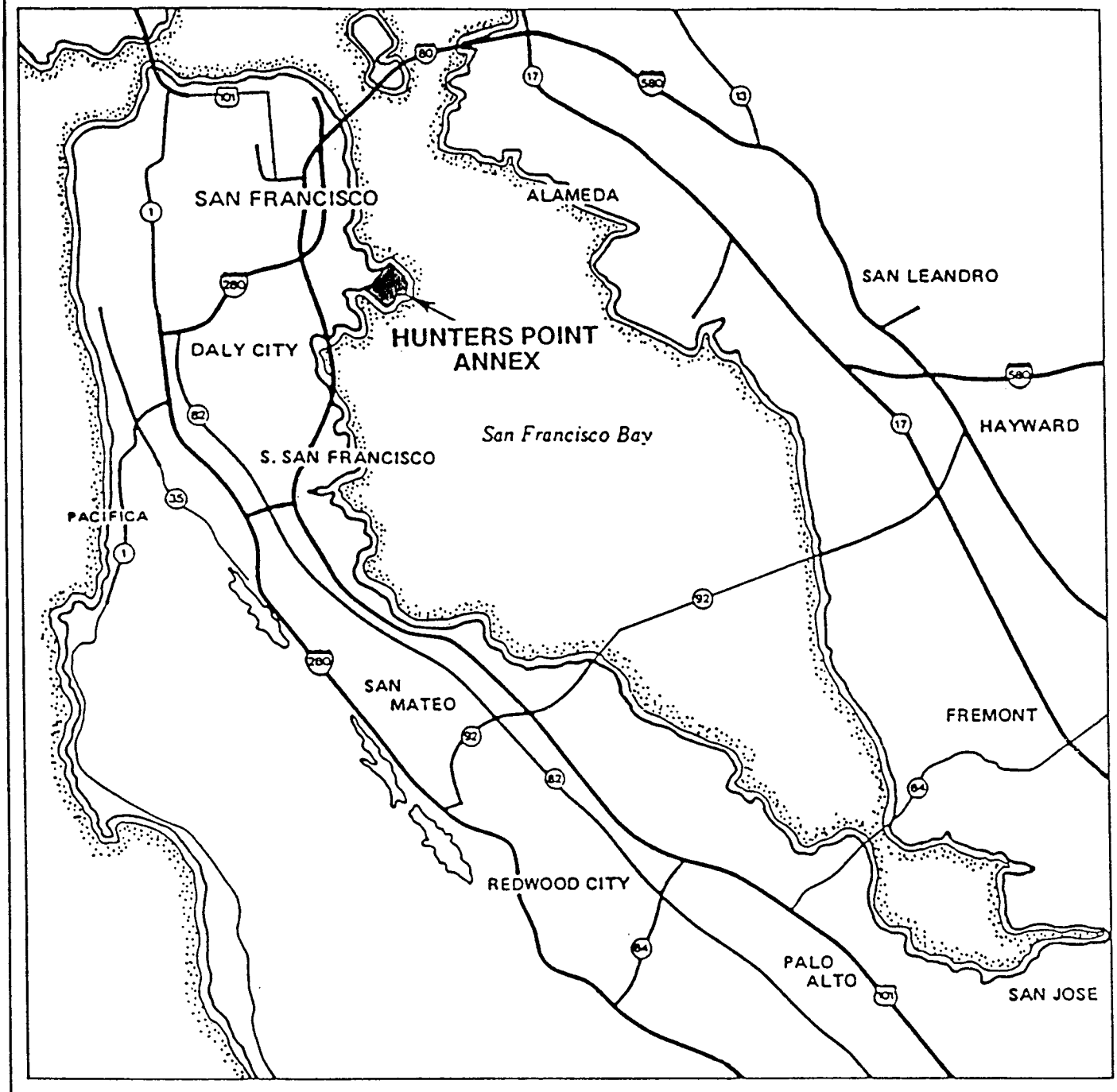
Table 1. Summary of Chemical Results -- Pump House - Building 819

Compound	Method	Detection Limit (mg/kg)	Pump House Sludge/ Liquid PH01 (mg/kg)	Detection Limit (mg/l)	Pump House Liquid/ Sludge PH02 (mg/l)	Manhole Liquid PH03 (mg/l)	Field Blank OC04 (mg/l)
Antimony	EPA 7040	3.0	ND	0.2	ND	ND	ND
Arsenic	EPA 6010	2.0	4.0	0.1	0.2	0.2	ND
Barium	EPA 7080	5.0	6.7	0.2	0.4	0.4	ND
Beryllium	EPA 7090	0.5	ND	0.02	ND	ND	ND
Cadmium	EPA 6010	0.3	0.4	0.01	0.02	0.02	ND
Chromium (total)	EPA 6010	0.5	9.4	0.02	0.10	0.04	ND
Cobalt	EPA 6010	0.5	0.3	0.02	0.04	0.03	ND
Copper	EPA 6010	0.5	16	0.02	0.02	0.02	ND
Lead	EPA 6010	3.0	16	0.2	0.2	ND	ND
Mercury	EPA 7470	0.1	ND	0.001	ND	ND	ND
Molybdenum	EPA 6010	0.5	0.6	0.02	0.03	0.02	0.09
Nickel	EPA 6010	0.5	3.0	0.02	0.15	0.14	ND
Selenium	EPA 6010	3.0	3.0	0.2	0.5	0.5	ND
Silver	EPA 6010	1.0	0.6	0.05	ND	ND	ND
Thallium	EPA 7840	3.0	ND	0.2	ND	ND	ND
Vanadium	EPA 6010	0.5	0.3	0.02	ND	0.02	ND
Zinc	EPA 6010	0.5	21	0.01	0.07	0.05	0.03
pH	EPA 9040	--	7.3	--	7.4	7.4	5.5
Sulfide	SMWW 427D	--	6.5	1.0	ND	ND	ND

ND = None Detected
-- = Does not apply
mg/kg = milligram per kilogram
mg/l = milligram per liter

ILLUSTRATIONS

4661

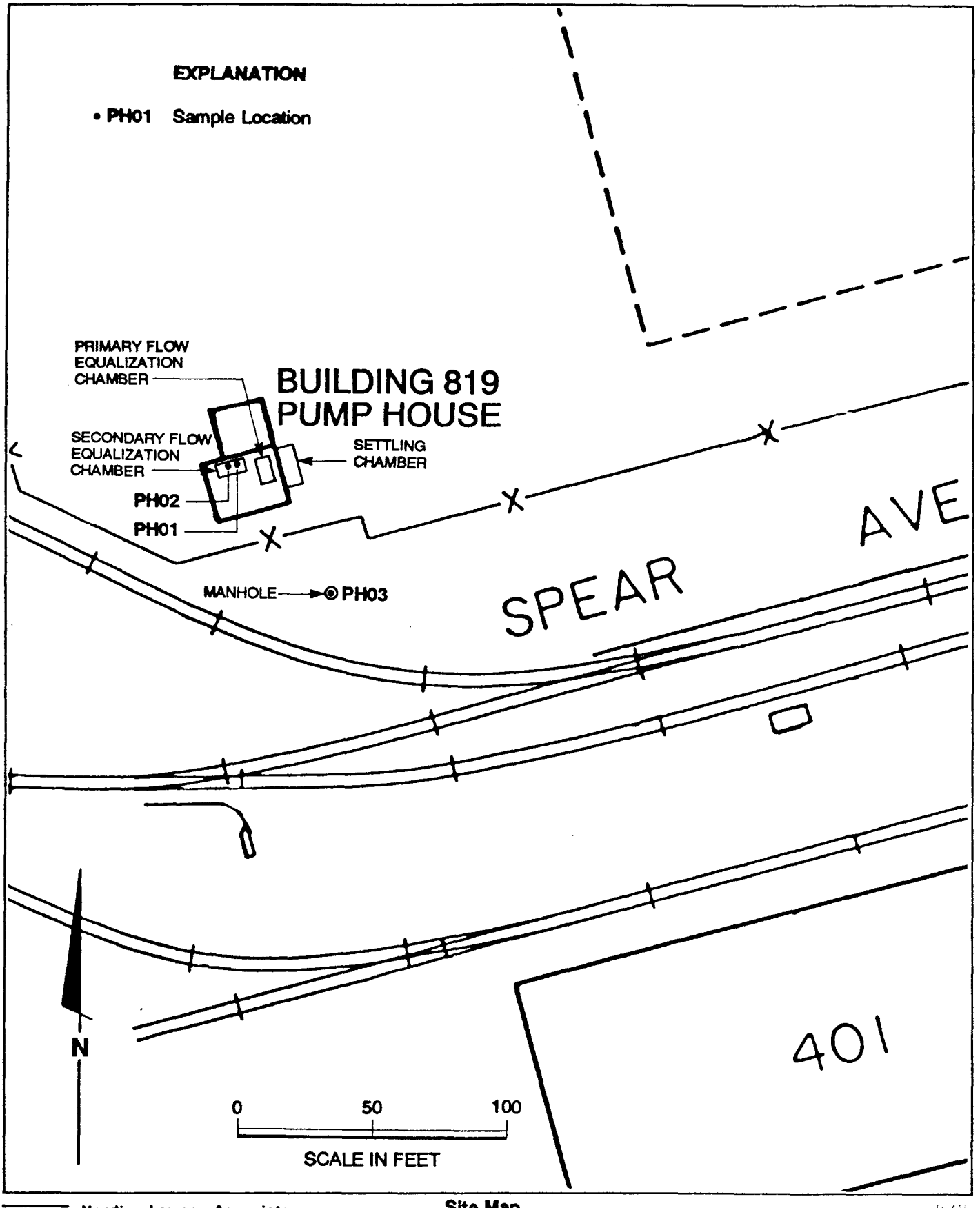


Harding Lawson Associates
Engineers and Geoscientists

Location Map
Building 819 - Pump House
Hunters Point Annex
San Francisco, California

PLATE
1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ML	2176,163.02		6/88		



Harding Lawson Associates
Engineers and Geoscientists

Site Map
Building 819 - Pump House
Hunters Point Annex
San Francisco, California

PLATE **2**

DRAWN	JOB NUMBER	APPR	DATE	REVISED	DATE
ML	2176,163.02		6/88		

Appendix

LABORATORY REPORT AND CHAIN OF CUSTODY FORM

APPENDIX – LABORATORY REPORTS AND CHAIN OF CUSTODY FORM

PUMP HOUSE – BUILDING 819 INVESTIGATION

THE ABOVE IDENTIFIED APPENDIX HAS MISSING PAGES. IT COULD NOT BE DETERMINED WHETHER THESE PAGES ARE MISSING OR THE DOCUMENT WAS ISSUED WITHOUT THESE PAGES.

QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 14724
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 2176,159/163/160.02,
HUNTERS POINT

DATE RECEIVED: 05/17/88
DATE ANALYZED: 05/18/88
DATE REPORTED: 06/01/88

	C&T ID:	14724-3	14724-4	14724-5	14724-9
PARAMETER	SAMPLE ID:	8899PH01	8899PH02	8899PH03	8899OC04
pH, SU EPA 9040		7.3	7.4	7.4	5.5
CYANIDE, mg/L SMWW 412J		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
SULFIDE, mg/L SMWW 427D		6.5	ND(1)	ND(1)	ND(1)
OIL & GREASE, mg/L SMWW 503A		ND(20)	ND(20)	ND(20)	ND(20)

ND = NONE DETECTED. LIMIT OF DETECTION IS INDICATED IN PARENTHESES.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 14724-3
CLIENT: Harding Lawson Associates
SAMPLE ID: 8899PH01
HLA Job #: 2176,159/163/160.02
HUNTERS POINT

DATE RECEIVED: 05/17/88
DATE ANALYZED: 05/24,27/88
DATE REPORTED: 06/01/88

CAM 17 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	DETECTION LIMIT mg/Kg	METHOD
Antimony	ND	3.0	EPA 7040
Arsenic	4.0	2.0	EPA 6010
Barium	6.7	5.0	EPA 7080
Beryllium	ND	0.5	EPA 7090
Cadmium	0.4	0.3	EPA 6010
Chromium (total)	9.4	0.5	EPA 6010
Cobalt	0.3	0.5	EPA 6010
Copper	16	0.5	EPA 6010
Lead	16	3.0	EPA 6010
Mercury	ND	0.1	EPA 7470
Molybdenum	0.6	0.5	EPA 6010
Nickel	3.0	0.5	EPA 6010
Selenium	3.0	3.0	EPA 6010
Silver	0.6	1.0	EPA 6010
Thallium	ND	3.0	EPA 7840
Vanadium	0.3	0.5	EPA 6010
Zinc	21	0.5	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	<1	115	Mercury	<1	105
Arsenic	19	105	Molybdenum	18	99
Barium	26	99	Nickel	15	92
Beryllium	<1	100	Selenium	17	115
Cadmium	15	80	Silver	<1	84
Chromium	22	80	Thallium	<1	125
Cobalt	<1	86	Vanadium	26	92
Copper	13	87	Zinc	9	82
Lead	11	82			

Curtis & Tompkins, Ltd.

LAB NUMBER: 14724-4
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 2176,159/163/160.02, H. P.
SAMPLE ID: 8899PH02

DATE RECEIVED: 05/17/88
DATE ANALYZED: 05/24,27/88
DATE REPORTED: 06/01/88

CAM 17 Metals in Aqueous Solutions

METAL	RESULT mg/L	DETECTION LIMIT mg/L	METHOD
Antimony	ND	0.2	EPA 7040
Arsenic	0.2	0.1	EPA 6010
Barium	0.4	0.2	EPA 7080
Beryllium	ND	0.02	EPA 7090
Cadmium	0.02	0.01	EPA 6010
Chromium (total)	0.10	0.02	EPA 6010
Cobalt	0.04	0.02	EPA 6010
Copper	0.02	0.02	EPA 6010
Lead	ND	0.2	EPA 6010
Mercury	ND	0.001	EPA 7470
Molybdenum	0.03	0.02	EPA 6010
Nickel	0.15	0.02	EPA 6010
Selenium	0.5	0.2	EPA 6010
Silver	ND	0.05	EPA 6010
Thallium	ND	0.2	EPA 7840
Vanadium	ND	0.02	EPA 6010
Zinc	0.07	0.01	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	<1	115	Mercury	<1	89
Arsenic	4	94	Molybdenum	6	98
Barium	31	109	Nickel	20	91
Beryllium	<1	100	Selenium	1	100
Cadmium	6	96	Silver	17	84
Chromium	<1	90	Thallium	<1	125
Cobalt	<1	88	Vanadium	8	91
Copper	5	91	Zinc	4	99
Lead	8	90			

Curtis & Tompkins, Ltd.

LAB NUMBER: 14724-5
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 2176,159/163/160.02, H. P.
SAMPLE ID: 8899PH03

DATE RECEIVED: 05/17/88
DATE ANALYZED: 05/24,27/88
DATE REPORTED: 06/01/88

CAM 17 Metals in Aqueous Solutions

METAL	RESULT mg/L	DETECTION LIMIT mg/L	METHOD
Antimony	ND	0.2	EPA 7040
Arsenic	0.2	0.1	EPA 6010
Barium	0.4	0.2	EPA 7080
Beryllium	ND	0.02	EPA 7090
Cadmium	0.02	0.01	EPA 6010
Chromium (total)	0.04	0.02	EPA 6010
Cobalt	0.03	0.02	EPA 6010
Copper	0.02	0.02	EPA 6010
Lead	ND	0.2	EPA 6010
Mercury	ND	0.001	EPA 7470
Molybdenum	0.02	0.02	EPA 6010
Nickel	0.14	0.02	EPA 6010
Selenium	0.5	0.2	EPA 6010
Silver	ND	0.05	EPA 6010
Thallium	ND	0.2	EPA 7840
Vanadium	0.02	0.02	EPA 6010
Zinc	0.05	0.01	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	<1	115	Mercury	<1	89
Arsenic	4	94	Molybdenum	6	98
Barium	31	109	Nickel	20	91
Beryllium	<1	100	Selenium	1	100
Cadmium	6	96	Silver	17	84
Chromium	<1	90	Thallium	<1	125
Cobalt	<1	88	Vanadium	8	91
Copper	5	91	Zinc	4	99
Lead	8	90			

Curtis & Tompkins, Ltd.

LAB NUMBER: 14724-9
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 2176,159/163/160.02, H. P.
SAMPLE ID: 8899OC04

DATE RECEIVED: 05/17/88
DATE ANALYZED: 05/24,27/88
DATE REPORTED: 06/01/88

CAM 17 Metals in Aqueous Solutions

METAL	RESULT mg/L	DETECTION LIMIT mg/L	METHOD
Antimony	ND	0.2	EPA 7040
Arsenic	ND	0.1	EPA 6010
Barium	ND	0.2	EPA 7080
Beryllium	ND	0.02	EPA 7090
Cadmium	ND	0.01	EPA 6010
Chromium (total)	ND	0.02	EPA 6010
Cobalt	ND	0.02	EPA 6010
Copper	ND	0.02	EPA 6010
Lead	ND	0.2	EPA 6010
Mercury	ND	0.001	EPA 7470
Molybdenum	ND	0.02	EPA 6010
Nickel	0.09	0.02	EPA 6010
Selenium	ND	0.2	EPA 6010
Silver	ND	0.05	EPA 6010
Thallium	ND	0.2	EPA 7840
Vanadium	ND	0.02	EPA 6010
Zinc	0.03	0.01	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	<1	115	Mercury	<1	89
Arsenic	4	94	Molybdenum	6	98
Barium	31	109	Nickel	20	91
Beryllium	<1	100	Selenium	1	100
Cadmium	6	96	Silver	17	84
Chromium	<1	90	Thallium	<1	125
Cobalt	<1	88	Vanadium	8	91
Copper	5	91	Zinc	4	99
Lead	8	90			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 14724-3
CLIENT: Harding Lawson Associates
HLA Job #: 2176,159/163/160.02, HUNTERS POINT
CLIENT ID: 8899PH01

DATE RECEIVED: 05/17/88
DATE EXTRACTED: 05/23/88
DATE ANALYZED: 05/24/88
DATE REPORTED: 06/01/88

EPA METHOD 625: BASE/NEUTRAL AND ACID EXTRACTABLES IN WATER
EXTRACTION METHOD: EPA 3510 LIQUID/LIQUID

ACID COMPOUNDS	RESULT ug/L	LOD ug/L
Phenol	ND	5
2-Chlorophenol	ND	5
2-Nitrophenol	ND	25
2,4-Dimethylphenol	ND	5
2,4-Dichlorophenol	ND	5
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	5
2,4-Dinitrophenol	ND	25
4-Nitrophenol	ND	25
2-Methyl-4,6-dinitrophenol	ND	25
Pentachlorophenol	ND	25
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
Bis(2-chloroisopropyl)ether	ND	5
N-nitrosodi-n-propylamine	ND	5
Hexachloroethane	ND	5
Nitrobenzene	ND	5
Isophorone	ND	5
Bis(2-chloroethoxy)methane	ND	5
1,2,4-Trichlorobenzene	ND	5
Naphthalene	ND	5
Hexachlorobutadiene	ND	5
Hexachlorocyclopentadiene	ND	5
2-Chloronaphthalene	ND	5
Dimethyl phthalate	ND	5
Acenaphthylene	ND	5
2,6-Dinitrotoluene	ND	5
Acenaphthene	ND	5
2,4-Dinitrotoluene	ND	5
Fluorene	ND	5
Diethyl phthalate	ND	5
4-Chlorophenylphenyl ether	ND	5
N-Nitrosodiphenylamine	ND	5
1,2-Diphenylhydrazine	ND	5
4-Bromophenylphenyl ether	ND	5

LABORATORY NUMBER: 14724-3
CLIENT ID: 8899PH01

BASE/NEUTRAL COMPOUNDS	RESULT ug/L	LOD ug/L
Hexachlorobenzene	ND	5
Phenanthrene	ND	5
Anthracene	ND	5
Dibutylphthalate	ND	5
Fluoranthene	ND	5
Benzidine	ND	25
Pyrene	ND	5
Butylbenzylphthalate	ND	5
Benzo (a) anthracene	ND	5
3,3'-Dichlorobenzidine	ND	25
Chrysene	ND	5
Bis (2-ethylhexyl)phthalate	ND	5
Di-n-octyl phthalate	ND	5
Benzo (b) fluoranthene	ND	5
Benzo (k) fluoranthene	ND	5
Benzo (a) pyrene	ND	5
Indeno (1,2,3-cd) pyrene	ND	25
Dibenzo (a,h) anthracene	ND	25
Benzo (ghi) perylene	ND	25
HSL COMPOUNDS		
Benzoic Acid	ND	50
2-Methylphenol	ND	5
4-Methylphenol	ND	5
2,4,5-Trichlorophenol	ND	5
Aniline	ND	5
Benzyl Alcohol	ND	25
4-Chloroaniline	ND	10
2-Methylnaphthalene	ND	5
2-Nitroanline	ND	25
3-Nitroaniline	ND	25
Dibenzofuran	ND	5
4-Nitroaniline	ND	25

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	98	2-Fluorobiphenyl	81
2,4,6-tribromophenol	101	Terphenyl-d14	67
Nitrobenzene-d5	69		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 14724-4
CLIENT: Harding Lawson Associates
HLA Job #: 2176,159/163/160.02, HUNTERS POINT
CLIENT ID: 8899PH02

DATE RECEIVED: 05/17/88
DATE EXTRACTED: 05/23/88
DATE ANALYZED: 05/24/88
DATE REPORTED: 06/01/88

EPA METHOD 625: BASE/NEUTRAL AND ACID EXTRACTABLES IN WATER
EXTRACTION METHOD: EPA 3510 LIQUID/LIQUID

	RESULT ug/L	LOD ug/L
ACID COMPOUNDS		
Phenol	ND	5
2-Chlorophenol	ND	5
2-Nitrophenol	ND	25
2,4-Dimethylphenol	ND	5
2,4-Dichlorophenol	ND	5
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	5
2,4-Dinitrophenol	ND	25
4-Nitrophenol	ND	25
2-Methyl-4,6-dinitrophenol	ND	25
Pentachlorophenol	ND	25
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
Bis(2-chloroisopropyl)ether	ND	5
N-nitrosodi-n-propylamine	ND	5
Hexachloroethane	ND	5
Nitrobenzene	ND	5
Isophorone	ND	5
Bis(2-chloroethoxy)methane	ND	5
1,2,4-Trichlorobenzene	ND	5
Naphthalene	ND	5
Hexachlorobutadiene	ND	5
Hexachlorocyclopentadiene	ND	5
2-Chloronaphthalene	ND	5
Dimethyl phthalate	ND	5
Acenaphthylene	ND	5
2,6-Dinitrotoluene	ND	5
Acenaphthene	ND	5
2,4-Dinitrotoluene	ND	5
Fluorene	ND	5
Diethyl phthalate	ND	5
4-Chlorophenylphenyl ether	ND	5
N-Nitrosodiphenylamine	ND	5
1,2-Diphenylhydrazine	ND	5
4-Bromophenylphenyl ether	ND	5

LABORATORY NUMBER: 14724-4
CLIENT ID: 8899PH02

BASE/NEUTRAL COMPOUNDS	RESULT ug/L	LOD ug/L
Hexachlorobenzene	ND	5
Phenanthrene	ND	5
Anthracene	ND	5
Dibutylphthalate	ND	5
Fluoranthene	ND	5
Benzidine	ND	25
Pyrene	ND	5
Butylbenzylphthalate	ND	5
Benzo (a) anthracene	ND	5
3,3'-Dichlorobenzidine	ND	25
Chrysene	ND	5
Bis (2-ethylhexyl)phthalate	ND	5
Di-n-octyl phthalate	ND	5
Benzo (b) fluoranthene	ND	5
Benzo (k) fluoranthene	ND	5
Benzo (a) pyrene	ND	5
Indeno (1,2,3-cd) pyrene	ND	25
Dibenzo (a,h) anthracene	ND	25
Benzo (ghi) perylene	ND	25
HSL COMPOUNDS		
Benzoic Acid	ND	50
2-Methylphenol	ND	5
4-Methylphenol	ND	5
2,4,5-Trichlorophenol	ND	5
Aniline	ND	5
Benzyl Alcohol	ND	25
4-Chloroaniline	ND	10
2-Methylnaphthalene	ND	5
2-Nitroanline	ND	25
3-Nitroaniline	ND	25
Dibenzofuran	ND	5
4-Nitroaniline	ND	25

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	61	2-Fluorobiphenyl	90
2,4,6-tribromophenol	87	Terphenyl-d14	71
Nitrobenzene-d5	70		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 14724-5
CLIENT: Harding Lawson Associates
HLA Job #: 2176,159/163/160.02, HUNTERS POINT
CLIENT ID: 8899PH03

DATE RECEIVED: 05/17/88
DATE EXTRACTED: 05/23/88
DATE ANALYZED: 05/24/88
DATE REPORTED: 06/01/88

EPA METHOD 625: BASE/NEUTRAL AND ACID EXTRACTABLES IN WATER
EXTRACTION METHOD: EPA 3510 LIQUID/LIQUID

	RESULT ug/L	LOD ug/L
ACID COMPOUNDS		
Phenol	ND	5
2-Chlorophenol	ND	5
2-Nitrophenol	ND	25
2,4-Dimethylphenol	ND	5
2,4-Dichlorophenol	ND	5
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	5
2,4-Dinitrophenol	ND	25
4-Nitrophenol	ND	25
2-Methyl-4,6-dinitrophenol	ND	25
Pentachlorophenol	ND	25
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
Bis(2-chloroisopropyl)ether	ND	5
N-nitrosodi-n-propylamine	ND	5
Hexachloroethane	ND	5
Nitrobenzene	ND	5
Isophorone	ND	5
Bis(2-chloroethoxy)methane	ND	5
1,2,4-Trichlorobenzene	ND	5
Naphthalene	ND	5
Hexachlorobutadiene	ND	5
Hexachlorocyclopentadiene	ND	5
2-Chloronaphthalene	ND	5
Dimethyl phthalate	ND	5
Acenaphthylene	ND	5
2,6-Dinitrotoluene	ND	5
Acenaphthene	ND	5
2,4-Dinitrotoluene	ND	5
Fluorene	ND	5
Diethyl phthalate	ND	5
4-Chlorophenylphenyl ether	ND	5
N-Nitrosodiphenylamine	ND	5
1,2-Diphenylhydrazine	ND	5
4-Bromophenylphenyl ether	ND	5

LABORATORY NUMBER: 14724-5
CLIENT ID: 8899PH03

BASE/NEUTRAL COMPOUNDS	RESULT ug/L	LOD ug/L
Hexachlorobenzene	ND	5
Phenanthrene	ND	5
Anthracene	ND	5
Dibutylphthalate	ND	5
Fluoranthene	ND	5
Benzidine	ND	25
Pyrene	ND	5
Butylbenzylphthalate	ND	5
Benzo (a) anthracene	ND	5
3,3'-Dichlorobenzidine	ND	25
Chrysene	ND	5
Bis (2-ethylhexyl)phthalate	ND	5
Di-n-octyl phthalate	ND	5
Benzo (b) fluoranthene	ND	5
Benzo (k) fluoranthene	ND	5
Benzo (a) pyrene	ND	5
Indeno (1,2,3-cd) pyrene	ND	25
Dibenzo (a,h) anthracene	ND	25
Benzo (ghi) perylene	ND	25
HSL COMPOUNDS		
Benzoic Acid	ND	50
2-Methylphenol	ND	5
4-Methylphenol	ND	5
2,4,5-Trichlorophenol	ND	5
Aniline	ND	5
Benzyl Alcohol	ND	25
4-Chloroaniline	ND	10
2-Methylnaphthalene	ND	5
2-Nitroanline	ND	25
3-Nitroaniline	ND	25
Dibenzofuran	ND	5
4-Nitroaniline	ND	25

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	50	2-Fluorobiphenyl	66
2,4,6-tribromophenol	93	Terphenyl-d14	56
Nitrobenzene-d5	52		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 14724-9
CLIENT: Harding Lawson Associates
HLA Job #: 2176,159/163/160.02, HUNTERS POINT
CLIENT ID: 88990C04

DATE RECEIVED: 05/17/88
DATE EXTRACTED: 05/23/88
DATE ANALYZED: 05/24/88
DATE REPORTED: 06/01/88

EPA METHOD 625: BASE/NEUTRAL AND ACID EXTRACTABLES IN WATER
EXTRACTION METHOD: EPA 3510 LIQUID/LIQUID

ACID COMPOUNDS	RESULT ug/L	LOD ug/L
Phenol	ND	5
2-Chlorophenol	ND	5
2-Nitrophenol	ND	25
2,4-Dimethylphenol	ND	5
2,4-Dichlorophenol	ND	5
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	5
2,4-Dinitrophenol	ND	25
4-Nitrophenol	ND	25
2-Methyl-4,6-dinitrophenol	ND	25
Pentachlorophenol	ND	25
BASE/NEUTRAL COMPOUNDS		
Bis(2-chloroethyl)ether	ND	5
1,3-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
Bis(2-chloroisopropyl)ether	ND	5
N-nitrosodi-n-propylamine	ND	5
Hexachloroethane	ND	5
Nitrobenzene	ND	5
Isophorone	ND	5
Bis(2-chloroethoxy)methane	ND	5
1,2,4-Trichlorobenzene	ND	5
Naphthalene	ND	5
Hexachlorobutadiene	ND	5
Hexachlorocyclopentadiene	ND	5
2-Chloronaphthalene	ND	5
Dimethyl phthalate	ND	5
Acenaphthylene	ND	5
2,6-Dinitrotoluene	ND	5
Acenaphthene	ND	5
2,4-Dinitrotoluene	ND	5
Fluorene	ND	5
Diethyl phthalate	ND	5
4-Chlorophenylphenyl ether	ND	5
N-Nitrosodiphenylamine	ND	5
1,2-Diphenylhydrazine	ND	5
4-Bromophenylphenyl ether	ND	5

LABORATORY NUMBER: 14724-9
CLIENT ID: 8899OC04

BASE/NEUTRAL COMPOUNDS	RESULT ug/L	LOD ug/L
Hexachlorobenzene	ND	5
Phenanthrene	ND	5
Anthracene	ND	5
Dibutylphthalate	ND	5
Fluoranthene	ND	5
Benzidine	ND	25
Pyrene	ND	5
Butylbenzylphthalate	ND	5
Benzo (a) anthracene	ND	5
3,3'-Dichlorobenzidine	ND	25
Chrysene	ND	5
Bis (2-ethylhexyl)phthalate	ND	5
Di-n-octyl phthalate	ND	5
Benzo (b) fluoranthene	ND	5
Benzo (k) fluoranthene	ND	5
Benzo (a) pyrene	ND	5
Indeno (1,2,3-cd) pyrene	ND	25
Dibenzo (a,h) anthracene	ND	25
Benzo (ghi) perylene	ND	25
HSL COMPOUNDS		
Benzoic Acid	ND	50
2-Methylphenol	ND	5
4-Methylphenol	ND	5
2,4,5-Trichlorophenol	ND	5
Aniline	ND	5
Benzyl Alcohol	ND	25
4-Chloroaniline	ND	10
2-Methylnaphthalene	ND	5
2-Nitroanline	ND	25
3-Nitroaniline	ND	25
Dibenzofuran	ND	5
4-Nitroaniline	ND	25

ND = None Detected, Limit of Detection (LOD) appears in far right column

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	101	2-Fluorobiphenyl	80
2,4,6-tribromophenol	157	Terphenyl-d14	60
Nitrobenzene-d5	96		

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 14724-3
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 2176,159/163/160.02, HUNTERS POINT
SAMPLE ID: 8899PH01

DATE RECEIVED: 05/17/88
DATE EXTRACTED: 05/31/88
DATE ANALYZED: 06/02/88
DATE REPORTED: 06/03/88

EPA 608: Organochlorine Pesticides and PCBs in Water
Extraction Method: EPA 3580

COMPOUND	RESULT mg/L	DETECTION LIMIT Mg/L
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHC	ND	0.05
Heptachlor	ND	0.05
Aldrin	ND	0.05
Heptachlor Epoxide	ND	0.05
Endosulfan I	ND	0.05
Dieldrin	ND	0.05
pp-DDE	ND	0.05
Endrin	ND	0.05
Endosulfan II	ND	0.05
pp-DDT	ND	0.05
Chlordane	ND	0.5
Toxaphene	ND	0.5
Methoxychlor	ND	0.5
PCB 1016	ND	0.5
PCB 1221	ND	0.5
PCB 1232	ND	0.5
PCB 1242	ND	0.5
PCB 1248	ND	0.5
PCB 1254	ND	0.5
PCB 1260	ND	0.5

ND = Not detected.

QA/QC SUMMARY:

Duplicate: Relative % Difference	24
Average Spike Recovery %	89

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 14724-4
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 2176,159/163/160.02, HUNTERS POINT
SAMPLE ID: 8899PH02

DATE RECEIVED: 05/17/88
DATE EXTRACTED: 05/31/88
DATE ANALYZED: 06/01/88
DATE REPORTED: 06/03/88

EPA 608: Organochlorine Pesticides and PCBs in Water
Extraction Method: EPA 3510

COMPOUND	RESULT ug/L	DETECTION LIMIT ug/L
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHC	ND	0.05
Heptachlor	ND	0.05
Aldrin	ND	0.05
Heptachlor Epoxide	ND	0.05
Endosulfan I	ND	0.05
Dieldrin	ND	0.05
pp-DDE	ND	0.05
Endrin	ND	0.05
Endosulfan II	ND	0.05
pp-DDT	ND	0.05
Chlordane	ND	0.5
Toxaphene	ND	0.5
Methoxychlor	ND	0.5
PCB 1016	ND	0.5
PCB 1221	ND	0.5
PCB 1232	ND	0.5
PCB 1242	ND	0.5
PCB 1248	ND	0.5
PCB 1254	ND	0.5
PCB 1260	ND	0.5

ND = Not detected.

QA/QC SUMMARY:

Duplicate: Relative % Difference	24
Average Spike Recovery %	89

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 14724-5
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 2176,159/163/160.02, HUNTERS POINT
SAMPLE ID: 8899PH03

DATE RECEIVED: 05/17/88
DATE EXTRACTED: 05/31/88
DATE ANALYZED: 06/01/88
DATE REPORTED: 06/03/88

EPA 608: Organochlorine Pesticides and PCBs in Water
Extraction Method: EPA 3510

COMPOUND	RESULT ug/L	DETECTION LIMIT ug/L
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHC	ND	0.05
Heptachlor	ND	0.05
Aldrin	ND	0.05
Heptachlor Epoxide	ND	0.05
Endosulfan I	ND	0.05
Dieldrin	ND	0.05
pp-DDE	ND	0.05
Endrin	ND	0.05
Endosulfan II	ND	0.05
pp-DDT	ND	0.05
Chlordane	ND	0.5
Toxaphene	ND	0.5
Methoxychlor	ND	0.5
PCB 1016	ND	0.5
PCB 1221	ND	0.5
PCB 1232	ND	0.5
PCB 1242	ND	0.5
PCB 1248	ND	0.5
PCB 1254	ND	0.5
PCB 1260	ND	0.5

ND = Not detected.

QA/QC SUMMARY:

Duplicate: Relative % Difference	24
Average Spike Recovery %	89

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 14724-9
CLIENT: HARDING LAWSON ASSOCIATES
JOB #: 2176,159/163/160.02, HUNTERS POINT
SAMPLE ID: 8899OC04

DATE RECEIVED: 05/17/88
DATE EXTRACTED: 05/31/88
DATE ANALYZED: 06/01/88
DATE REPORTED: 06/03/88

EPA 608: Organochlorine Pesticides and PCBs in Water
Extraction Method: EPA 3510

COMPOUND	RESULT ug/L	DETECTION LIMIT ug/L
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHC	ND	0.05
Heptachlor	ND	0.05
Aldrin	ND	0.05
Heptachlor Epoxide	ND	0.05
Endosulfan I	ND	0.05
Dieldrin	ND	0.05
pp-DDE	ND	0.05
Endrin	ND	0.05
Endosulfan II	ND	0.05
pp-DDT	ND	0.05
Chlordane	ND	0.5
Toxaphene	ND	0.5
Methoxychlor	ND	0.5
PCB 1016	ND	0.5
PCB 1221	ND	0.5
PCB 1232	ND	0.5
PCB 1242	ND	0.5
PCB 1248	ND	0.5
PCB 1254	ND	0.5
PCB 1260	ND	0.5

ND = Not detected.

QA/QC SUMMARY:

Duplicate: Relative % Difference	24
Average Spike Recovery %	89

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